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ABSTRACT

This document reports a study of school-based kindergarten through 12th grade environmental education (EE) programs. The study was developed to gather baseline information on the status of EE, identify education reform initiatives and explore their possible interactions with EE, and provide an overview of institutional needs and the factors that limit the broader dissemination of EE programs in the school setting. Questionnaires, observations, and interviews were used to collect data from state education departments with EE offices, federal agencies, national and local non-governmental organizations, local school districts that have demonstrated leadership in EE, and professionals at universities and EE associations. (MKR)

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ED 391 650

Pieces of a Puzzle

An Overview of the Status of Environmental Education in the United States

April 1, 1995

A Report Prepared for the

Pew Charitable Trusts

Prepared by

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INTRODUCTION

This report documents a study, on behalf of The Pew Charitable Trusts (PCT), of school-based, kindergarten through twelfth grade environmental education (EE) programs in the United States. This study was designed to gather baseline information on the status of EE; identify education reform initiatives and explore their possible interactions with EE; and provide an overview of institutional needs and the factors that limit the broader dissemination of EE programs in the school setting. The study's objectives were to:

Describe the status of environmental education

- Summarize exemplary national initiatives and funding programs including review of the federal and state agencies, and non-governmental organizations that are involved in actively promoting, funding and/or mandating environmental education.
- Analyze the grades or grade groups where EE is an important curriculum element.
- Discuss the factors that limit the promulgation of EE in U.S. education systems.

Explain the relationship to education reform

- Identify relevant education reform initiatives and their potential relevance to the implementation of this EE Initiative.
- Describe and analyze school restructuring and reform initiatives and considerations regarding their impact on EE.

The report is divided into two major sections that parallel the study's objectives. The first section reports on the status of EE, while the second considers the relationship of EE to education reform.

In reviewing the results of the study it is important to note that it does not purport to be a complete survey of all the EE programs that are currently being implemented in the U.S. Rather, the study represents a cross-section of the multitude of national, regional, statewide and local efforts in the country.

ENVIRONMENTAL EDUCATION STUDY

The information and observations in the study are drawn from a survey and series of site visits that included interviews. Information was gathered from two groups: environmental education leaders and practitioners, and those working in the area of school reform.

Methodology

The EE survey was designed to provide an overview of existing environmental education programs at the federal, state and local level including both governmental agencies and non-governmental organizations. The written questionnaire was

designed to capture comparable information about a wide range of different types of EE programs.

Survey participants were chosen from: state education departments with environmental education offices; federal agencies; national and local non-governmental organizations; local school districts that have demonstrated leadership in environmental education; and professionals at universities and environmental education associations.

The environmental education questionnaire was distributed to 58 organizations. Forty-three organizations responded. (Table 1 presents a listing of the respondents, organized by categories.)

Site visits were made to a cross-section of survey participants. Based on surveys received the project consultant visited 17 institutions. The sites included teacher training institutions, federal and state EE agencies, universities, professional associations and non-governmental organizations. (Table 1 indicates the EE institutions visited or interviewed through in-depth telephone calls.)

The visits were used to conduct in-depth discussions about program design and implementation methods. Interviews explored the future needs and plans of the different institutions as well as their representatives' views regarding needs and limitations in the overall field of EE.

Table 1 Agencies and Organizations Responding to the Environmental Education Survey

Federal, State and Local Agencies
- Ames Community School District
- Arizona Department of Education
- California Department of Education*
- Environmental Protection Agency, Office of Environmental Education
- Florida Department of Education
- Maryland Department of Education
- Ohio Department of Education
- Ohio Department of Natural Resources
- Pennsylvania Department of Education
- School District of Waukesha, Wisconsin
- Texas Education Agency (Texas Environmental Education Advisory Committee)
- U.S. Forest Service, Conservation Education Program
- U.S. National Park Service*
- U.S. Fish and Wildlife Service, Branch of Training
- Washington Superintendent of Public Instruction*
- Wisconsin Department of Public Instruction*

Non-formal Education Facilities
- Indianapolis Zoo
- Metrozoo Miami
- Minnesota Zoological Garden*
- National Zoological Park, NOAHS Program*
- Pocono Environmental Education Center
- Schuylkill Center for Environmental Education
- Zoo Atlanta

Non-governmental Organizations
- Center for Marine Conservation (partial survey response)
- Center for Environmental Education*
- Global Action Information Network
- National Environmental Education and Training Foundation*
- National Fish and Wildlife Foundation
- National Parks Foundation, Parks as Classrooms Program*
- National Project WET
- National Wildlife Federation*
- Project Learning Tree, American Forest Foundation* (partial survey response)
- Project WILD, Western Regional Environmental Education Council*
- Science Center of Connecticut
- Second Nature
- Sierra Club, National Environmental Education Committee
- World Wildlife Fund*
- YWCA, Albuquerque, New Mexico

Professional Associations and Academic Institutions
- American Zoo and Aquarium Association*
- National Consortium for Environmental Education and Training, Univ. of Michigan*
- North American Association for Environmental Education*
- Ohio State University, ERIC Clearinghouse, School of Natural Resources
- University of Wisconsin, Department of Natural Resources*

* EE institutions visited or interviewed through in-depth telephone calls during this study.

Results of Survey

Status of Environmental Education Programs

This section summarizes and discusses the status of environmental education programming at the 43 institutions that provided written responses to the EE Survey. The data are presented in the same order that they appear in the survey questionnaire.

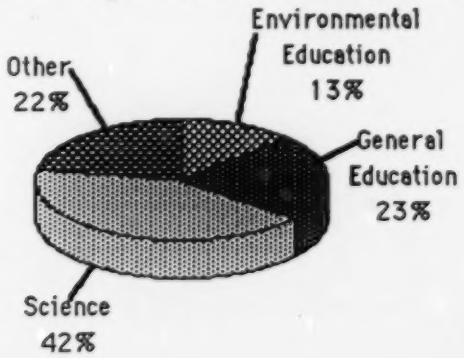
General Institutional Information

Staffing Levels and Training

The average size of the professional EE staff for the 43 agencies is slightly over 5 full-time professionals. This figure is, however, skewed by the inclusion of three major federal agencies, the U.S. Park Service, National Parks Foundation, and the U.S. Fish and Wildlife Service. Excluding these federal agencies, the average full-time, EE staff at the 40 other institutions is 3.5 individuals. The average number of part-time EE staff at these organizations is 2.75 per organization (excluding the federal agencies).

Thirteen percent of the professional staff have university degrees in environmental education. A slightly higher percentage of professional staff has degrees in general education. The vast majority of EE staff at the organizations surveyed have degrees in either science or another subject rather than an education related discipline. Chart 1 summarizes the University degrees of the professional EE staff at the 43 institutions.

Chart 1 Educational Background of Professional EE Staff



Thirty percent of the organizations surveyed have EE staff who have degrees in both environment and education. It is frequently the case that

small EE organizations do not have staff with academic training in either EE or environmental sciences.

Eleven of the 43 institutions (26%) have full-time staff devoted to training in-service teachers. The majority of the organizations have individuals who have teacher training as only one of a variety of organizational responsibilities.

Operating Budgets

Funding for EE programs comes from a variety of sources. However, several types of organizations are highly dependent on one or two sources. State, federal and local agencies are almost totally dependent on funding from government sources. Most other types of EE organizations have a broader base of support.

On the average, the most significant sources of funding are state agencies, program fees, miscellaneous sources and federal agencies in descending order. Table 2 summarizes the average significance of funding sources.

Table 2 Sources of Funding Operating Budgets

Source	Average Percentage from Source
Federal Agencies	13%
State Agencies	24%
School Districts	6%
Corporate Grants	4%
Foundation Grants	10%
Individual Donors	6%
Program Fees	16%
Other	16%

Overall, foundation support represents an average of 10% of the funding for the 43 EE programs. Fifteen of the 43 institutions (35%) report receiving foundation support. For those 15 EE organizations, foundation support represents over 25% of the funding for their operating budgets.

Total operating budgets for these 43 EE organizations represent an annual total of over $31,000,000 (estimates for those that did not report budgets bring the total annual budgets to about $35,000,000). Excluding the five major federal programs (EPA, NEETF, National Park Service/Foundation, U.S. Fish and Wildlife Service, and U.S. Forest Service), the total annual operating budget drops to approximately $18,000,000. This represents an average budget of about $475,000 per organization.

Budgets vary tremendously among the different types of organizations. Budgets for the federal agencies, for example, range from $1,500,000 at the U.S. Forest Service to $7,000,000 in the EPA, Office of Environmental Education. The non-governmental organizations also have a great range of budgets, from $1,450 in one volunteer-based organization, to $1,800,000 at a national organization. Table 3 summarizes the average operating budgets by type of organization.

Table 3 Average Operating Budgets by Categories of Organizations

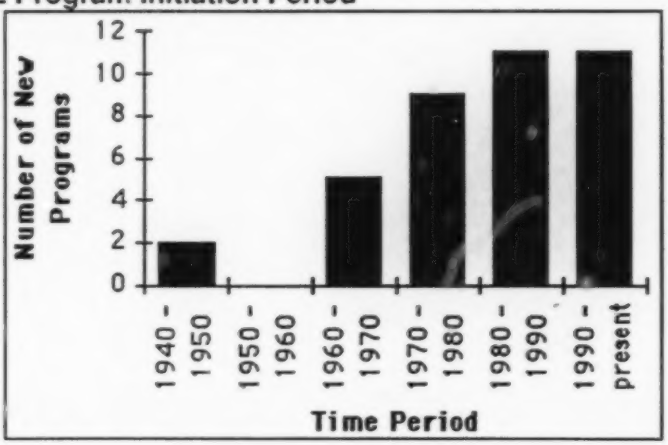
Categories of EE Organizations	Average Annual Operating Budget
Federal, State and Local Agencies	$1,300,000
Non-formal Education Facilities	$634,000
Non-governmental Organizations	$476,000
Professional Associations and Academic Institutions	$437,000

Program Histories

On the average, the organizations surveyed started their EE programs in 1980, ten years after the first National Environmental Education Act and ten years before the second National EE Act. Two of the programs, the National Wildlife Federation and Ohio Department of Education were pioneers in the field and started programs in the 1940s. Five of the EE programs (12%) are one or two years old.

The field of EE is still growing and changing rapidly and as indicated earlier, most of this development has occurred in the past 15 years. Twenty-four of the 43 EE programs (56%) surveyed were started since 1980. Chart 2 indicates the time periods when the 43 EE programs were initiated.

Chart 2 EE Program Initiation Period



Environmental education programs have been started as the result of a variety of individual and institutional initiatives. In most cases, the EE programs started as the result of the endeavors of individuals, staff and executives. (Note: some programs reported that they began as the result of actions by more than one individual or decision-making body.) Table 4 summarizes how the EE programs were initiated.

Table 4 How EE Programs Were Initiated

Program Initiation Process	Number of Organizations
Individual Initiative	11
Staff Initiative	10
Executive Initiative	16
Teacher Initiative	5
Principal Initiative	0
District Decision	2
School Board Decision	1
Legislative Mandate	10
Encouraged by Local Activist Group	4
Other	12

* Note: Data regarding "Principal Initiatives," "District Decisions" and "School Board Decisions" must be considered skewed because only two of the seven school districts asked to participate returned completed surveys.

State agencies were the most important source reported for original funding of EE programs. These agencies provided initial funding to 33% percent of the organizations. "Other sources" (miscellaneous types) of funding sources were significant for 23% of the institutions. Most of the NGO-based programs received start-up funding from their parent organizations. Some state agencies received initial funds from specialized sources such as environmental license plate fees. (Note: several organizations reported that original funding came from more than one source.) Table 5 summarizes how the EE programs were initially funded.

Table 5 Initial Funding Sources for EE Programs

Funding Sources	Number of Organizations
Federal Agencies	8
State Agencies	14
School Districts	3
Corporate Grants	1
Foundation Grants	4
Individual Donors	5
Program Fees	5
Other	10

Program Mandates and Mandate Funding

The majority of federal and state agencies and local school districts considered in this study operate their EE programs under some type of mandate. Seventeen of the 19 (89%) agencies that responded to the survey have a federal or state mandate. It is important to note that state agencies were chosen for the study on the basis of their legislative mandates and known program strengths.

Some of the state-based EE programs have mandates. Depending on information sources, approximately 6-13 state departments of education (12 - 26%) have legislative mandates for EE. Ruskey and Wilkie (Promoting Environmental Education, 1994 in press) report that, as of Spring 1994, six states have "comprehensive EE programs." Several states not listed by Ruskey and Wilkie reported, in this survey, that they have legislative mandates. Table 6 summarizes the mandating bodies of the government EE programs.

Table 6 Mandating Bodies for Government Agency EE Programs

Mandating Body	Numbers of Agencies
Federal Agency	4
State Legislature	12
State Agency	6
School District	0

Some of the existing EE mandates were instituted as early as 1970 but, on the average, the mandates have been in existence since 1984. Some of the states that have formal mandates have never had funding for implementation or have recently lost their funding. For example, Texas, Maryland and Washington have legislative mandates for their programs that do not include direct funding. The funding for Minnesota's mandated EE program was recently terminated as the result of legislative budget cuts.

Six of the mandated EE programs receive funding associated with the mandating legislation. Five of these programs receive funds from general fund budgets and three receive funds from other special sources such as environmental license plate fees.

Program Purposes

This section of the survey considered the institutional mission statements, long-range planning processes and overall purposes of the EE programs.

Institutional Mission Statements

The majority (78%) of the EE programs studied have institutional mission statements. Most of these mission statements have been updated in the past 3-4 years.

The mission statements demonstrate a wide range of overall programmatic objectives. Some of the organizations strive to achieve a fully integrated EE curriculum, others endeavor to achieve "topic-specific" educational goals, while a third type seeks to play a supportive role toward implementing broad, generalized environmental and/or EE objectives.

A small sampling of mission statements provides useful insights into the diversity of EE organizations. These examples were chosen to represent a cross-section of different types of organizations and missions (institution names have been removed to protect confidentiality):

State Department of Education

- "Each individual should have a basic understanding of the environmental sciences.
- Each individual should understand the interrelationships between human actions and the environment.
- Environmental education should be integrated into all school curriculums.
- Diverse environmental education opportunities should be available to the general public.
- Environmental education in the state should be a cooperative venture, coordinated at all levels within the state and with national and international networks."

State Department of Education

"The goals for program planning, implementation and assessment call for the integration of environmental education at all appropriate levels. The goals for teacher pre-service are to develop environmental education competencies for all certificated teachers and resource agency personnel, and to promote and demonstrate interdisciplinary and inter-institutional collaboration. The emphasis for teacher in-service is to provide education training opportunities. The systemic plan proposes that the retrofitting of old facilities, as well as planning and development of new facilities, model sound environmental practices. Finally, on-going evaluation and adjustment of the systemic plan itself is emphasized." (Emphasis in original.)

National EE Project

". . . to facilitate and promote the awareness, appreciation, knowledge and stewardship of water resources through the development and dissemination of classroom-ready teaching aids and through the establishment of state and internationally sponsored (EE training) programs."

City Zoo

". . . to provide recreational learning experiences for the citizens of (the state) through the exhibition and presentation of natural environments in a way that will foster a sense of discovery, stewardship and the need to preserve the Earth's plants and animals."

Small EE NGO

". . . provide knowledge and high quality information to support and encourage the most effective actions possible for sustainability and environmental preservation. (Our) unique emphasis is, through (our) own resources and through working collaboratively with others, to:

- provide accurate definitions of sustainability that serve people wishing to demonstrate sustainability in operation of their individual lives and in their vocations;
- quantify data on the magnitude of the changes necessary to attain sustainability; and,
- stress the need to integrate political, social, economic, and environmental factors in seeking a sustainable global society."

National Conservation Foundation

". . . to educate citizens of North America about the conservation of fish, wildlife, plant, and habitat resources."

Regional Environmental Education Center

". . . advance environmental awareness, knowledge, and skills, through education in order that those who inhabit and will inherit the planet may better understand the complexities of natural and human designed resources."

National EE Training Organization

"(Our) sole purpose is to catalyze a worldwide effort to make environment and development concerns a foundation of learning at all levels of education; kindergarten through university/professional school level."

National Association of EE Professionals

". . . to help people develop an awareness of and knowledge about the environment, as well as the ability and commitment to engage in problem-solving, inquiry, decision-making, and action. With these capabilities we can all work together to correct environmental problems, resolve value conflicts that often make these problems seem intractable, and prevent new problems from arising."

Institutional Long-Range Plans

Nineteen (46%) of the organizations have long-range implementation plans, compared to 78% with mission statements. Another 14 institutions (34%) stated their intentions to develop long-range plans during the next 1-3 years.

Overall Program Purposes

The services that organizations offer through their EE programs range from providing curriculum materials to building teacher awareness to offering field education opportunities for students. Providing curriculum materials for teachers/students and training teachers were ranked as the two highest priorities, based on priority ranking. The percentage of resources/effort dedicated to providing curriculum materials, training teachers, and providing field education opportunities for students were approximately equal. These three purposes receive approximately 52% of total resources and effort. Table 7 indicates the relative rankings of the principal program purposes.

Table 7 Relative Rankings of Institutional Program Purposes

Program Purpose	Rank Order*	% Resources or Efforts
Providing Curriculum Materials	1	17%
Training Teachers	2	18%
Building Teacher Awareness	3	13%
Field Education For Students	4	17%
Helping Teachers Develop Curriculum	5	9%
Providing Classroom Programs for Students	6	9%
Funding Teacher Organized Activities	7	5%

* Rank order is based on participants' scoring of priorities.

Funding teacher organized activities, providing classroom programs for students and helping teachers develop curriculum materials receive the smallest percentages of organizational resources/efforts. This may be an indicator of organizations that implement programs using a "top-down," headquarters-based approach.

At least three of the state agency-based EE programs incorporate specific programs to provide support for teacher organized projects. The data in Table 7 indicate that this is not a common programmatic practice. One state provides $1,000,000 in annual mini-grants to programs organized by teachers and other educators. Another state has a similar program funded at $800,000 per year. Both of these agencies report a history of successes and enthusiasm for these funding programs.

Program Participation

This section of the survey considered the participation of students, teachers, and agencies in the EE programs and the geographic scope of operations of the participating organizations.

Student Participation

Overall, students in 4th-6th grade and kindergarten to 3rd grade are more involved in EE programs than students in higher grades. Kindergarten through 6th grade students represent 70% of the participants in EE programs. Tenth-twelfth grade students receive the least attention from current EE programs. (Note: The "adjusted" student numbers and percentages more accurately reflect the actual situation than the "raw" data.) Table 8 presents the numbers and percentage of total student involvement by grade range.

Table 8 Student Participation in EE Programs by Grade Level

			Adjusted**	
Student Grade Level	Total Number Reported	% of Total	Total Number Reported	% of Total
K - 3rd	1,712,055	28%	346,555	35%
4th - 6th	1,714,229	28%	348,729	35%
7th - 9th	1,405,256	23%	172,256	17%
10th - 12th	1,368,267	22%	135,267	13%

** Adjusted numbers reflect the removal of data from Ohio Department of Education, Pennsylvania Department of Education, and U.S. Fish and Wildlife Service. The data from these organizations were not provided on a "grade-specific" basis.

Teacher Involvement

Teachers in grades 4-6 and K-3 are slightly more involved in EE training programs than teachers in higher grades. Kindergarten through 6th grade teachers receive 53% of the training. The 10th-12th grade group of teachers receive the least attention from current teacher training programs. Table 9 presents the numbers and percentages for total teacher involvement by grade range.

Table 9 Teacher Involvement in EE Programs by Grade Level

			Adjusted**	
Teacher Grade Level	Total Number Reported	% of Total	Total Number Reported	% of Total
K - 3rd	41,047	26%	26,047	26%
4th - 6th	43,836	27%	28,836	28%
7th - 9th	38,116	24%	23,116	23%
10th - 12th	37,688	23%	22,688	23%

** Adjusted numbers reflect removal of data from Ohio Department of Education, Pennsylvania Department of Education, and U.S. Fish and Wildlife Service. The data from these organizations were not "grade-specific."

There is a substantial discrepancy between the proportion of teachers that receive training and the number of students that participate in EE programs in the different grade groups. It appears that teachers in the 7th-12th grades have practically as many training opportunities as teachers from the lower grades. Student involvement data, however, indicate that a significantly smaller proportion of the 7th-12th grade students participate in EE programs.

Geographic Scope of Programs

There are at least 20 organizations implementing and supporting EE programs at a national level in the United States. This survey considered most major national programs. Table 10 summarizes the geographic scope of EE programs surveyed.

Table 10 Geographic Scope of EE Programs

Geographic Coverage Area	Number of Organizations
International	7
National (U.S.)	20
Regions in U.S.	1
States	17
School Districts or Cities	4

** Note: These data are an artifact of organizations selected for this study, they should not be construed as representative of relative proportions of total numbers of organizations.

Data indicate that, in addition to mandated programs operated by state agencies, there are many non-governmental organizations that support state-oriented EE programs. Several "national" EE organizations operate nationwide, but support state-based programs. For example, Project WILD and Project Learning Tree have national offices but their teaching training programs are organized and operated by state-based teams.

At the local level, there are literally hundreds of EE programs. These programs operate through city park systems, nature centers, zoos, science centers, museums and school districts.

Just a few of the programs surveyed operate at the school site level. During preparations for the survey it became apparent that "site-based" school programs are very unusual. State EE coordinators found it very difficult to identify successful "model schools." They indicated that the vast majority of EE programs are implemented by individual teachers and are not school-wide.

Program Priorities and Resource Commitments

This section of the survey considered organizations' views of their current priorities and staff/resource allocations in terms of working with different grade groups of students and teachers. They were also asked to indicate the "preferred" rankings and allocations that they would achieve in the "ideal" situation. Table 11 summarizes the status and preferences regarding teacher involvement by grade group.

Table 11 Current and Preferred Priorities and Resource Commitments

	Current Status		Preferred Status	
Target Audience	Rank Order	% of Staff & Resources Committed	Rank Order	% of Staff & Resources Committed
K - 3rd Grades	4	9%	5-6	8%
4th - 6th Grades	2	19%	3	11%
7th - 9th Grades	3	14%	4	9%
10th - 12th Grades	6	6%	5-6	7%
Pre-service Teachers	5	9%	2	15%
In-service Teachers	1	31%	1	32%
Other	7	11%	7	17%

* Rank order is based on participants' scoring of priorities.

Current Status

Organizations report that they focus most (31%) of their EE program staff and resources on training in-service teachers. Programs directed toward the audience of 4th-6th grade students are both the second highest priority and receive the second highest proportion of staff and resources (19%). According to these data, 7th-9th grade students are the third highest priority. These results, however, contradict student participation data from the previous survey section which indicate that K-3rd students receive more attention than 7th-9th grade students. The participation data are probably a more accurate reflection of the current status of staff and resource expenditures.

Preferred Status

Providing training for in-service teachers is viewed as the highest program priority for EE organizations. Training for in-service teachers was ranked as the highest priority in terms of both current and preferred EE activities. The organizations recommend continuing staff and resource commitments at levels approximately equal to current levels (31% current and 32% preferred).

Participants indicated that significantly higher priority should be given to providing training to pre-service teachers. Pre-service training was reported as the fifth highest priority for current EE programming. When asked about the preferred situation, the organizations indicated that pre-service training should be established as the second priority after in-service teacher training. The preferred situation would be to increase commitment for pre-service training to a level of approximately 15% of staff and resources, an increase from current levels of 9%.

Teacher Training

Teacher training is one of the highest overall priorities for EE organizations. At least 25 of the organizations provide direct teacher training opportunities. These training programs reach between 25,000 and 50,000 in-service teachers and an additional 5,000-10,000 pre-service teachers annually. (The National Education Association estimates that there are 2,841,000 K-12 teachers in public and private schools across the United States.)

In-service Teacher Training

The vast majority (66-70%) of teacher training programs are focused on teachers in K-6th grades. Since they began, the EE programs have focused most of their training on teachers in the 4th-6th grades, with K-3rd grade teachers as the second priority. Table 12 summarizes the teacher training opportunities by grade range (not all organizations that offer training provided quantified data).

Table 12 Teacher Training Opportunities by Grade Range

Teacher Grade Level	Number Trained in 1993-94	% of Total	Total Number Trained to Date	% of Total
K - 3rd	6,540	30%	20,529	25%
4th - 6th	8,556	40%	33,332	41%
7th - 9th	3,807	18%	16,110	20%
10th - 12th	2,635	12%	11,387	14%

* Project WILD and Project Learning Tree did not provide data.

Pre-service Teacher Training

Twelve, less than 30%, of the EE organizations offer training opportunities for "pre-service" teachers. However, as reported previously, providing training opportunities for pre-service teachers is viewed by most EE organizations as a high priority for future activities.

The Pennsylvania Department of Education and the U.S. Fish and Wildlife Service each report major offerings in pre-service teacher training. These two programs represent 76% of the pre-service opportunities reported by all the

organizations studied. The pre-service training opportunities offered by these agencies have grown substantially during the past three years.

There has been limited growth in pre-service training offerings during the past three academic years, excluding one state department of education and one federal program. Table 13 summarizes training opportunities for pre-service teachers.

Table 13 Training Opportunities for Pre-service Teachers

Academic Year	Number of Pre-service Trainees	Adjusted** Number of Pre-service Trainees
1993-94	6,225	1,485
1992-93	4,380	1,831
1991-92	2,620	1,140

* Project WILD and Project Learning Tree data were not available.
** Excluding Pennsylvania Department of Education and U.S. Fish and Wildlife.

In-service Training Program Descriptions and Assessment

The depth of content and quality of teacher training programs in EE is severely limited by the length of training program offerings. The average length of an EE teacher training program is in the range of 2-4 days, excluding extended programs such as master's degrees. It is reasonable to characterize the vast majority of teacher training programs as weekend workshops. Some of the institutions offer programs as brief as one-half day in contrast to the multi-week programs offered by some organizations.

Training opportunities in EE are also limited by the fact that most programs are offered on a limited schedule. It is difficult to establish a total number of teacher training programs offered each year because many of the organizations reported an annual variability. While there are some exceptions, it appears that most organizations offer workshops 4-10 times each year. The state Departments of Education in Washington, Florida and Pennsylvania each offer 50 to more than 100 workshops per year. As previously reported, Project Wild and Project Learning Tree also offer one to several workshops in each state every year.

Most of the organizations report conducting assessments of their training programs on a regular basis. These evaluations are used to refine future training programs and identify future training needs.

Teachers can receive continuing education credit for training with 17 of the organizations. Fourteen institutions offer teachers some type of financial compensation for attending workshops.

Training Program Follow-up

Most EE organizations provide some follow-up with teachers after they have completed a training program. Conducting follow-up workshops and distributing newsletters to teachers were reported as the most common and effective methods of maintaining contact with teachers. Nineteen organizations offer follow-up workshops to teachers, while 18 provide teachers with newsletters. Supporting teachers through trainer visits to teaching sites, telephone support "hot-lines," curriculum material update mailings, and implementation grants are also common follow-up methods. Nine organizations report using electronic mail (e.g., Internet) or electronic bulletin board systems to maintain communications with teachers.

Providing newly trained teachers with support from mentor teachers and offering implementation grants are viewed as the most effective methods to follow-up training programs. Trainer visits to sites, follow-up workshops, and "critical friends" support groups are also generally considered effective approaches for follow-up. Table 14 provides data on activities that provide follow-up to teacher training.

Table 14 Follow-up Activities for Teacher Training

Follow-up Methods	Rank Order	Number of Organizations	Average Effectiveness Ranking*
Newsletters	2	18	3.4
E-mail (e.g., Internet)	9	9	3.2
Telephone support "hot-line"	4	14	3.2
Electronic bulletin board system	10	9	2.8
Curriculum material update mailings	5	14	3.1
Curriculum clearinghouse service	8	11	3.0
Trainer visits to sites	3	14	3.9
Follow-up workshops	1	19	3.9
Mentor teachers	12	5	4.2
Training clearinghouse service	15	4	3.8
Peer network	7	11	3.5
"Critical friends" support groups	11	6	3.8
Provide implementation grants	6	10	4.0
Grant information clearinghouse	13	5	3.6
Miscellaneous other	14	4	n/a

* Rank order is based on participants' scoring of priorities.

Factors Limiting Training Opportunities

The principal factors that limit the expansion of training programs can be grouped into two major categories: availability of training resources and commitment of educational systems to training teachers in EE. Training program funding was ranked as the most significant limitation and availability of "training staff time" (a factor that can easily be eliminated through increased funding) was ranked third most important. Limited "teacher time" ranked as the second most limiting factor and is directly related to the fourth and fifth ranked limitations, "school and principal support" and "district support."

The commitment of educational systems to training teachers in EE is the most significant factor related to the expansion of training programs. The limitations of "funding" and "training staff time" could be easily overcome if school districts, principals and schools were more committed to EE and providing EE training to their teachers.

Table 15 provides data on the factors limiting teacher training opportunities.

Table 15 Factors Limiting Teacher Training Opportunities

Limiting Factors	Rank Order
Funding	1
Teacher Time	2
Training Staff Time	3
School and Principal Support	4
District Support	5
Teacher Awareness	6
Teacher Interest	7
Communication with Teachers	8
Curriculum Materials	9
Availability of Training Facilities	10
Other	11
Parental Support	12

* Rank order is based on participants' scoring of priorities.

Approaches to Overcoming Constraints on Teacher Training Programs

Although some of the survey participants focused on the "systemic" constraints that limit teacher training, most reiterated their desire for additional funding and training support staff. Expending more funds and adding more staff are the most obvious answers to this question but ignore the substantive constraints on teacher training.

Several organizations provided useful insights into current constraints on teacher training in EE (institution names have been removed to protect confidentiality):

State Department of Natural Resources

- "Need to get schools to see the value of EE for improving education. Need to approach this from school's perspective such as building-on model curriculum or hot topics."

Federal Conservation Agency

- "Increased support from school districts and principals for EE rather than sports programs."

State Department of Education

- "EE needs to be taught by my trained curriculum educators as an academic field. . . . If EE is to move into the respectable place beside its other academic peers then "professional educators" need to be the trainers."

National EE Training Organization

- ". . . lack of demand for environmental knowledge from educational funders and future employers."
- ". . . create the demand for environmental knowledge and provide technical and financial support for teacher training."
- "Institutional incentives from dean, school boards, etc. for teachers to get training and materials to make environmental concerns a foundation of learning."

State Science Center

- "Developing solid lines of communication with school districts is key to mustering the support necessary to get a program proposal off of the ground and eventually implemented."
- "Teachers are the key contacts, although administrators and representatives from state education agencies may be invaluable."
- "Personal contact (visits to classrooms, teacher meetings, etc.) to show that your project leaders truly support the teachers' efforts is also important."

Levels of support from educational systems are the underlying factor that constrain the impact, effectiveness and extent of EE teacher training programs. Demand from school districts, principals and teachers is not strong enough to sustain expanded teacher training programs.

Curriculum Development and Materials

Providing EE curriculum materials was rated as the second highest programmatic priority by survey participants. The majority of EE organizations offer printed support materials and curriculum guides while about 25% provide computer-based materials. Table 16 provides data on the number of organizations that offer EE curriculum materials.

Table 16 EE Curriculum Material Offerings

Curriculum Material Types	Number of Organizations Offering Materials by Grade Groupings			
	K-3	4th - 6th	7th - 9th	10th - 12th
Curriculum Guides	26	28	27	23
Lesson Plans	22	24	22	19
Printed Support Materials	27	28	30	25
Audio-visual Materials	18	21	20	20
Computer-based Materials	8	11	12	10
Other Materials	11	12	13	13

Curriculum Materials Descriptions and Assessment

There are at least forty different packages of curriculum materials currently being distributed by the EE survey participants. These materials vary greatly in depth of content, scope, functionality and subject area focus.

Most of the curriculum materials were described as applicable to wide ranges of grades. Over one-half of materials are reported to be applicable to kindergarten through 12th grade. (Curriculum materials that are targeted to reach such an extensive grade range generally require major adaptations by teachers to meet their specific needs.)

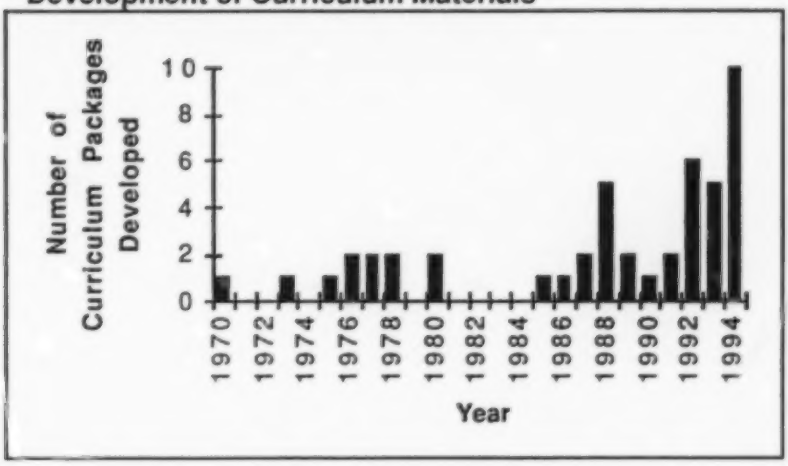
Organizations frequently provide teachers with supporting resources in conjunction with their curriculum materials. The majority of curriculum programs are supplemented with background documentation, guidebooks and training. Table 17 provides data on the number of organizations that offer supporting resources for their EE curriculum materials.

Table 17 Resource Materials Offered with Curriculum

Types of Supplemental Teacher Resources	Number of Curriculum Programs Offering Resources
Guide Books	28
Support Materials	31
Training	25
Funding	3
Other	13

Most packages of EE curriculum materials have been developed in the last 4-5 years. Project Learning Tree, the oldest major curriculum guide, has just undergone a thorough, three-year revision process. Generally, however, due to the great expense involved in evaluating materials, and revising them to meet changing needs, curriculum packages tend to become static, unchanging documents. Chart 3 summarizes data on development EE curriculum materials.

Chart 3 **Development of Curriculum Materials**



Three of the curriculum packages have achieved total distribution of over 100,000. A series of education guides produced by a the National Wildlife Federation has achieved the greatest distribution, over 4,000,000 copies. While Project WILD has achieved distribution of more than 1,000,000 copies of its materials and Project Learning Tree has distributed 325,000 copies throughout the U.S. Table 18 summarizes data on distribution of EE materials.

Table 18 **Distribution of Curriculum Materials**

Number of Curriculum Packages Distributed	Number of Curriculum Packages
< 1,000	6
1,000 - 5,000	5
5,000 - 10,000	3
10,000 - 20,000	3
20,000 - 50,000	4
50,000 - 100,000	4
100,000 - 1,000,000	1
More than 1,000,000	2

Curriculum Development Follow-up

Many organizations use newsletters and curriculum material update mailings to follow-up their curriculum development projects. Telephone support "hot-lines," follow-up workshops, curriculum clearinghouse services and peer networks are also common methods of maintaining communications. Table 19 provides data on follow-up activities for curriculum development programs.

Table 19 Follow-up Activities for Curriculum Development

Follow-up Methods	Rank Order	Number of Organizations	Average Effectiveness Ranking*
Newsletters	1	20	3.4
E-mail (e.g., Internet)	11	6	3.3
Telephone support "hot-line"	3	15	3.9
Electronic bulletin board system	11	6	3.3
Curriculum material update mailings	4	17	3.3
Curriculum clearinghouse service	5	14	3.4
Trainer visits to sites	5	11	4.4
Follow-up workshops	2	15	3.9
Mentor teachers	10	5	4.4
Training clearinghouse service	14	4	4.5
Peer network	5	13	3.7
"Critical friends" support groups	11	5	4.0
Provide implementation grants	8	9	4.0
Grant information clearinghouse	9	7	3.3
Miscellaneous other	15	4	n/a

* Rank order is based on participants' scoring of priorities.

Training clearinghouse services, trainer visits to sites and mentor teachers are generally viewed as the most effective follow-up methods. However, these follow-up methods are not commonly implemented, probably because they are relatively expensive.

Factors Limiting Curriculum Development

The availability of funding and staff time for curriculum development were ranked, by far, as the most limiting factors. None of the other factors were considered to be a significant limitation to curriculum development programs. Table 20 provides data on the factors limiting curriculum development programs.

The comments on overcoming constraints provided more useful insights into the actual limiting factors on curriculum development programs. (See next section.)

Table 20 Factors Limiting Curriculum Development Programs

Limiting Factors	Rank Order
Funding	1
Staff Time	2
District Support	3
Teacher Awareness	4
Administrator Support	5
Availability of Materials	6
Communication with Teachers	7
Teacher Interest	8

* Rank order is based on participants' scoring of priorities.

Approaches to Overcoming Constraints on Curriculum Development

The EE organizations provided a variety of recommendations regarding means to surmount the problems that face curriculum development programs. Their comments can be grouped into three major categories: expanding use of existing materials rather than developing new materials; working to create more linkages between EE curriculum materials, performance standards and learning objectives; and, increasing the demand for EE materials.

Representative examples of some thoughtful comments from survey participants include (institution names have been removed to protect confidentiality):

National Conservation NGO

- "We feel that there should be more funding for getting existing curricula into the hands of teachers rather than spending precious dollars on developing new curricula. There currently exists a vast amount of materials many of which have never been distributed. In addition, teacher training is an essential component of the process."

National Conservation NGO

- "(We have) decided not to develop additional curriculum beyond the current materials we offer. Unfortunately, the cost to develop high quality materials is prohibitive. We have decided instead to use existing materials and focus on the training aspects. We can help facilitate the use of excellent materials that are already available."

State Department of Natural Resources

- "Teachers are hungry for materials and will respond when provided -- especially if you can show the direct connections to their existing curriculum (model curriculum or courses of study) or to key education efforts -- authentic assessment, cooperative learning, etc."

State Department of Education

- "Link the curriculum to school reform initiatives by demonstrating the relationship to performance standards and desired student outcomes."

Regional Environmental Education Center

- "Conduct a long-term and systematic look at how best to initiate change. The recent (past 5 years) activities with reformation of science education might serve as a model *vis a vis* NSTA standards, AAAS 2061, and Science for All Americans."

State Department of Education

- "We are less concerned about developing more material (there are plenty of good resources available) and more concerned with keeping materials in print and training teachers."

Financial Assistance and Other Support

Section 7 of the survey explored the types of support that EE organizations offer program implementors in the areas of funding, provision of equipment and supplies, and other types of expenses. Table 21 summarizes the data on types of financial assistance and other support that EE organizations offer.

Thirty-three percent of EE organizations offer grants to teachers. Most of these organizations (10) offer grants to all teachers and school districts. Three of the grant-making organizations limit their assistance to teachers who have participated in their training programs.

Thirty-three percent of institutions, including most of those that make grants, also provide teachers and school districts with help getting grants. Generally, organizations provide assistance in obtaining grants as part of a broader EE program or they include it in teacher training workshops.

Nine organizations offer teachers equipment and supplies to help them implement their EE programs. Frequently, the equipment and supplies are distributed to teachers in conjunction with training programs. Five percent or less of the organizations limit their equipment and supplies assistance only to teachers who have participated in their training programs.

About ten percent of the EE organizations provide school districts with grants or other resource assistance. The state-based EE programs offer assistance to school districts as do two of the national quasi-governmental funding agencies (National Environmental Education and Training Foundation and National Fish and Wildlife Foundation). However, none of the non-governmental organizations provide financial support to school district programs.

Table 21 Financial Assistance and Other Support

Types of Assistance Offered	Number of Organizations Offering Each Type of Assistance — Recipient Groups				
	K-3rd	4th - 6th	7th - 9th	10th - 12th	School Districts
Grants Are Offered to All Teachers	10	10	10	10	7
Grants Are Offered Only to Teachers Who Participate in Training	2	4	3	3	0
Assistance Is Provided to Teachers to Help Them Obtain Grants	13	14	13	13	6
Equipment/Supplies Are Offered Only to Teachers Who Have Participated in Training	3	3	5	5	2
Equipment/Supplies Are Offered to All Teachers	8	9	8	7	3
Assistance is Provided to Teachers to Help Them Obtain Equipment and Supplies	9	9	10	10	3
Field Study Expenses	9	9	9	8	2
Other	6	6	7	6	1

Curriculum Elements and Student Testing

All responding states and school districts have established objectives for student achievement and teacher performance. These objectives may be called curriculum elements, frameworks, essential elements, outcomes or education standards, but they all specify what is expected of teachers and students in the classroom. Generally, states and districts also incorporate what they consider to be the most important learning objectives into their standardized testing programs.

Eleven of the 12 state departments and school districts surveyed report that EE is an essential element in their curriculum. One state reported that EE is not part of their state-based curriculum guidelines, but is included at the school district level. Another state reported that EE is part of their state and school district curriculum guidelines.

All the agencies report that EE is integrated into other disciplines (e.g., science or art). Five of the agencies report that EE is also treated as a discrete element in the curriculum. None of the agencies report that EE is handled solely as a discrete element in the curriculum.

EE is most frequently integrated into the science curriculum. However, most agencies also integrate EE into other disciplines including art, language arts, math and music.

EE is included in mandated tests by five of the states surveyed and by one school district. The small number of states that include EE in their standardized testing programs may be an important "summative" indicator of the level of support that EE currently receives in curriculum design and implementation.

(Note: State departments of education and school districts were included in this survey based on their involvement in EE. The data presented here are, therefore, substantially biased in favor of EE and should not be considered as a representative sample of all states or school districts.)

Subject Area Focus

There is substantial variation among the organizations as to which environmental topics are the focus of their EE programs. However, there are patterns that appear if the different topics are ranked in terms of the total number of organizations that are "active" on particular subjects.

The six topics most commonly covered in EE programs are: wetlands, wildlife conservation, general ecological principles, endangered species, water pollution, and recycling. The subject of wetlands is, for example, the focal point of curriculum materials in 26 organizations. Additionally, 23 of these organizations offer teacher training about wetlands conservation and management issues. Wildlife conservation is the subject of curriculum materials and teacher training in 24 institutions.

The least common topics for EE organizations are land use, farming systems, human population growth, temperate ecosystems, and toxic waste. These subjects are the focus of programs in about one-third of the EE organizations.

Table 22 reports the data on the subject area focus of the EE organizations.

Table 22 Subject Area Focus of EE Organizations

Subject Area Focus	Grade Participation				Materials and Support Provided			
	K-3	4-6	7-9	10-12	Teacher Training	Curriculum Materials	Funding for Teacher Led Projects	Practical Experience Opportunities for Students
Wildlife conservation	20	20	21	18	24	24	9	13
Plant conservation	14	18	16	13	17	18	6	12
Endangered species	16	21	19	15	22	25	6	12
Oceans	12	14	14	12	18	21	6	9
Rivers	11	13	14	11	20	19	7	11
Wetlands	15	19	19	15	23	26	9	15
Tropical rain forests	9	13	12	10	15	17	4	8
Deserts	11	14	11	11	14	17	4	8
Temperate ecosystems	11	14	11	10	13	14	5	9
Air pollution	13	16	15	13	18	17	6	11
Water pollution	15	17	17	16	23	24	8	15
Ocean pollution	9	13	13	11	15	17	4	9
Soil erosion and loss	11	15	13	11	18	20	5	10
Land use planning	9	15	15	13	20	18	5	10
Urban/suburban growth & development	8	13	12	12	18	15	6	11
Farming systems	6	8	6	7	10	11	3	7
Loss of farmland	6	6	6	7	9	10	3	7
Human population growth	8	12	11	10	13	13	4	8
Energy use	16	19	19	16	20	18	6	10
Energy conservation	12	15	14	11	16	15	4	7
Alternative energy sources	11	13	13	12	15	16	4	8
Waste management	12	16	15	15	22	19	6	10
Recycling	17	20	16	15	21	20	7	12
Toxic waste	10	11	11	11	15	14	6	9
General ecological principles	21	22	20	16	23	23	7	13
Local issues	10	15	14	14	20	15	6	11
Other	5	6	5	4	8	9	4	5

Cooperating Organizations

Most of the EE organizations maintain cooperative associations with schools, non-profit conservation and environmental groups, professional EE associations, state environmental agencies and non-formal education facilities. A small percentage of the EE organizations indicate that they cooperate with the U.S. Department of Education, federal environmental agencies, state education departments or university EE departments.

Table 23 reports data regarding cooperation of EE programs with other organizations.

Table 23 Cooperation with Other Organizations

Types of Cooperating Organizations	Number of EE Organizations
Schools	27
School Districts	18
State Education Departments	12
University Education Departments	14
University EE Departments	12
Non-formal Facilities	21
Professional EE Associations	22
Non-profit Conservation and Environmental Groups	26
State Environmental Agencies	22
Federal Education Agency	5
Federal Environmental Agencies	10

Current Needs

Some of the survey participants described the needs of their programs in terms of programmatic issues. Most, however, used the mantra "more funds and more staff."

The programmatic needs that were identified can be grouped into seven major categories:

- stronger partnerships between EE organizations and educational institutions
- support from educational leadership in state agencies and school districts
- mandates for state-based EE programs
- integration of EE across the school curriculum, and curriculum development time for teachers
- massive programs for in-service and pre-service teacher training
- evaluation and assessment research to assess student achievement and the effectiveness of different programmatic approaches to EE
- improved mechanisms for the exchange of information, materials and experiences among EE professionals

Some examples of thoughtful responses provide useful insight into the needs of EE programs and organizations (institution names have been removed to protect confidentiality):

State Department of Natural Resources

- "Legislation or mandates to bring EE to the forefront
- Support for existing efforts - build, expand, link with others (e.g., let's not start another clearinghouse or data base, there are too many now)

Local School District
- "Time to develop curriculum with existing math, language arts and social studies units"

State Department of Education
- "A strong vision for EE in the agency's administration
- Better communication and support within agency to see where EE fits into the overall vision for the future"

State Department of Education
- "A massive program for teacher in-service is needed in order to: 1. deepen their understanding of ecological concepts; 2. enhance their pedagogical strategies; and, 3. restructure their school programs around an environmental core curriculum"

State Department of Education
- "Opportunities and support to visit other state's EE programs and learn from our colleagues *in situ* and *vice versa"*

Federal Conservation Agency
- Electronic communication with parks, schools and other institutions
- Research and evaluation data on behavioral and cognitive changes resulting from EE"

State Science Center
- "Funding and staff to support a substantial program evaluation plan to better assess and direct programming efforts"

State Department of Education
- "Evaluation of in-service program with a "Crackerjack" evaluation team(s)

SCHOOL REFORM STUDY

This part of the overall study was designed to gather information regarding educational reform as it pertains to strengthening and supporting EE programs, not reform programs *per se*. The 15 institutions that participated were asked to provide general information on their experiences and perspectives in relation to integrating EE into on-going efforts in school reform.

Methodology

The project consultant conducted this research through interviews using a simple, informal question and answer method. The questions were designed to explore institutional and individual views on the actual and potential interrelationships between the development of educational reform programs and EE. Data were not gathered in a manner suitable to tabulation or statistical analysis.

Sample questions used in the interviews include:

- Have environmental education professionals or associations been involved in the development of your educational reform initiative?
- How do you view the relevance and significance of environmental education to your institutional goals in regard to educational reform?
- Does your reform initiative contain environmental science or environmental education content materials? If yes, are the environmental components considered as a separate subject or are they viewed as inter-disciplinary aspects of your curriculum reform efforts?
- What methods do you intend to use to facilitate the implementation of your educational reform initiative? What monitoring, evaluation and follow-up methods have you designed into your implementation program?

Interview participants for the reform study were selected to represent federal and state agencies, school reform organizers, university faculty and other education professionals. These participants were chosen because of their involvement in the development of subject-related education standards, experience with pre-service and in-service teacher training, or other support of educational reform programs.

- Association of Science Technology Centers
- American Association for the Advancement of Science, Project 2061
- Center for Educational Reform, University of Washington
- Center for Leadership in School Reform
- National Geographic Society, Education Foundation
- National Geographic Society, Geography Education Program
- National Research Council, National Science Education Standards
- National Science Foundation, Urban Systemic Initiative
- National Science Teachers Association, EE Advisory Board
- Northern Illinois University, NAAEE Standards Committee
- U.S. Department of Education, Division of FIRST
- University of California, New Standards Project
- University of Washington, Institute for Environmental Studies
- Washington State, Center for Improvement of Student Learning
- Washington State, Eisenhower Grants Program

Results of Survey

The Relation of Educational Reform to Environmental Education

Standards, authentic assessment, and site-based management are just a few of the phrases that describe the multitude of school and education reform initiatives that are currently being promoted across the country. However, while there is a new awareness of the need for educational reform, some of the ideas and practices have been developed and tested for many years.

The goals of these reform efforts can generally be grouped into the four categories outlined by "Goals 2000: Educate America Act of 1993." These goals, or statements of principle are:

- Higher expectations for all students
- New approaches to teaching
- Making schools accountable
- Building partnerships

Federal agencies, state departments of education, universities, school districts, think tanks, and private corporations have embraced these principles and are all jumping on the educational reform bandwagon. As a result, at the present time, there are literally hundreds of programs across the country working on one or more aspects of educational reform.

(Reviewing the different approaches and programs of educational reform is not within the scope of this report. An excellent article, "Reinventing America's Schools" in Teacher Magazine, May/June 1992, presents an enlightening overview of current reform efforts.)

What Environmental Education has to Offer Educational Reform

Environmental education has modeled some educational approaches that exemplify the best hopes of the reform movement. The EE movement's practical experiences could benefit the educational reform movement.

Environmental education has made use of innovative pedagogical methods including: "hands-on" activities; subject matter that is relevant to everyday life; and topics that engage students and allow them to become active participants in changing the way the world works. These creative approaches have been observed with interest by educators outside the field of environmental education.

Generally there was a consensus among the education reform specialists that were interviewed, regarding the importance of the methodological lessons learned from EE. Some of the reformers perceive the role of EE as "a good hook for science, math and literature." They believe in using EE as a tool that can be "the hook and bait to accomplish performance-based standards."

There isn't a consensus about the significance of "environmental" content in curricula. Some reformers see EE as side-stepping the "hard" sciences, too oriented toward societal issues. Others suggest that EE has a valid place throughout the curriculum, is the key to understanding and relating to the world, and should be fully integrated into as many disciplines as possible.

Educational Reform as an Opportunity for Environmental Education

The current, high level of activity in the educational reform movement represents an opportunity for achieving the educational goals of environmental education. The new national standards that are being developed for the teaching of science, geography and math could be effectively infused with interdisciplinary approaches to EE. In order to take advantage of this opportunity EE professionals must, however, become more willing and able to work within the formal structures of the educational system.

The present momentum in the reform movement demands that EE professionals change their normal mode of operations. As more fully discussed below, to take part in educational reform, EE professionals will have to:

- become more cognizant of the educational reform process;
- endeavor to be more participatory in the educational community as a whole;
- extricate themselves from their perceived role as proponents of "environmental advocacy education;" and,
- adapt their approaches to institutionalizing EE to fit the goals of education systems and educational reform.

Educational Reform Process

"Educational reformers" include federal and state education agencies, university education departments, "think tanks," school districts and those teachers and parents who seek to achieve the educational objectives of "Goals 2000." As a result, in comparison to EE, the educational reform process is strong and well funded.

Promoters of EE should begin to recognize that reformers have strong connections into educational systems, because, in most cases, they are the system. EE, on the other hand, has usually been organized by conservation organizations, zoos and nature centers, and others outside of the formal education system. If proponents of EE fail to recognize this and change their behavior, EE will continue to be relegated to the "sidelines" in formal education.

Most of the individuals interviewed in the educational reform study indicated a strong willingness to incorporate EE into their efforts. At the same time, however, several reported that their efforts to involve EE professionals in the process had been frustrated by lack of responsiveness and participation. This finding was confirmed in discussions with several of the EE professionals who viewed educational reform efforts as a low priority for their programmatic attention.

Until recently, most of the work on discipline-based education standards has been virtually ignored by the EE community. In what is almost a last minute response to

the recent work on standards in math, science, geography, etc., the North American Association for Environmental Education (NAAEE) has recently completed a "white paper" arguing for the creation of national EE standards. This white paper was considered by the NAAEE's board of directors in September 1994.

The present thinking by NAAEE's working group is that they should develop an independent set of EE standards. A separate set of EE standards represents a view that, for all practical purposes, is diametrically opposed to the typical pedagogical position taken by EE professionals, i.e., that EE should be fully integrated into all educational disciplines.

Most of the educational reformers viewed a separate set of EE standards as an unnecessary diversion. They viewed integration of EE into other discipline-based standards as the most effective approach to bringing EE into school curriculum.

Participation in the Educational Community

Environmental Education professionals must substantially expand their efforts to work with the system if EE is to achieve greater significance and integration into formal education. The survey indicated that most EE organizations don't have a history of strong working relationships with state and federal education agencies or university education departments. Working with these organizations is, however, crucial to the successful integration of EE into school curricula, national education standards and the testing of student achievements.

EE has the potential to achieve better working relationships with educational systems but it must be prepared to meet more rigorous performance standards. Educational reformers clearly perceive EE as an "engaging and attractive" field of study but this will not be sufficient in this time of assessment reform. EE will have to prove its effectiveness and meet the pedagogical standards of other disciplines and teaching methods. (Several of the EE organizations commented in the "Current Needs" section of the survey, on the importance testing, assessment and sorting out the most effective EE programs.)

Advocacy Education

Some of the education reformers commented on the limited applicability of EE because of its tendency to focus on "advocacy education." They voiced concern about EE that champions specific points of view or promotes specific "solutions" to the world's environmental problems.

The individuals and organizations involved in science education reform, for example, want to assure that the materials presented in science courses are scientifically valid. They seek to support programs and teaching methods that develop scientific literacy and investigative skills. They want any EE curriculum materials used in science coursework to be scientifically correct.

Current EE curriculum materials cover the full range, from almost pure propaganda pieces to scientifically valid, authentic and controlled experiments. If EE is going to become an engaging and relevant part of formal education systems it will have to

systematically move toward technically sound, scientifically based methods of gathering and evaluating data and presenting students with unbiased information. In this context, it is important to reiterate one state department of education's comments about curriculum constraints:

> "Try to redirect people, time and money from poor projects to good projects. There are many poor to mediocre curriculum development projects that waste time and money and contribute nothing to the improvement of EE and sometimes retard the process."

Adapting EE to Educational Systems and Educational Reform

EE is the "new kid on the block" and it is demanding a role in the structure of formal education. Experiences to date, however, indicate that EE won't achieve this goal without making major concessions to the formal educational system.

Environmental educators can begin to play a significant role in education systems, only if they re-focus their efforts on the needs of teachers, schools, school districts and education agencies. EE organizations need to become team members with formal education systems and stop being isolated from them.

In order to accomplish this, they must begin to view EE from the formal educator's perspective. Rather than asking teachers and school systems to meet the needs of EE, they must build partnerships with educators, based on the needs of the educators. They must take the initiative and strengthen their search for the common ground with existing educational systems.

Efforts seeking separate mandates and standards for EE reinforce its separation from mainstream educational systems and discourage integration into the daily operations of the classroom teacher. Environmental educators must, rather, focus their attention on integrating EE into existing structures of curricula, essential elements and state frameworks.

Educational relevance is a two way street. While EE may be highly relevant to the daily life of every student, the role of EE in the classroom will continue to be constricted as long as environmental educators appear to represent a specific agenda item called the "environment." EE curriculum materials must be redesigned to fit into existing curricula not promoted as a separate discipline, but rather as a part of the education of the whole child.

The tasks of integrating the "new" teaching approaches represented by EE and building partnerships with existing educational systems will neither be effortless nor expeditious. It is encouraging to note, however, that there are strong statements of support for these undertakings in the principles of "Goals 2000." Also, the "representatives" of the educational reform movement interviewed during this study, appeared to be open-minded and willing to meet environmental education on common ground.